



THE SALMON-LEAP AT PEN Y GRAIG.

FRESH-WATER FISH.

I. THE SALMON, (*Salmo salar*.)

IN commencing our account of *Fresh-water Fish*, it may appear somewhat contradictory to place first on the list the common Salmon, an inhabitant alternately of fresh and salt water, who, as Isaac Walton quaintly observes, "like some persons of honour and riches, which have both their winter and summer residences, has the fresh rivers for summer, and the salt water for winter, to spend his life in." Nevertheless, we have the example of the worthy angler himself to sanction our calling him the "King of fresh-water Fish;" and, in truth, the salmon is a native of the streams and not of the sea.

The salmon family includes, besides the common salmon, a large proportion of the fresh-water fish of Europe, and of those peculiar to the lakes and rivers of other countries. The members of this family delight in clear water and in rapid currents; therefore, in fishing for them, the angler is generally led to healthful and luxuriant scenery where Nature displays all her freshness and beauty. Many of the other tenants of fresh water are found in ponds, pools, or stilly parts of the stream, and the pleasure of fishing in such situations is much less, as is also the value of the expected prize.

The form of the common salmon (*Salmo salar*) is elegant, and well adapted for swift motion through the water. The body is scaly, of a lengthened oblong shape;

the head small and smooth; the first dorsal fin is nearly in the centre of the back, and the ventral fin immediately under it; in like manner, the second dorsal and anal fins correspond with each other; while the pectoral fin is small, pointed, and placed very low down towards the throat. The teeth are very numerous.

When very young, this fish is called the "smelt," or "smolt," the meaning of which is "little one;" as it advances in size, it acquires the name of "grilse," or "gilse;" and it is not till it is full grown, and has gained its proper flavour and colour, that it is called salmon. When first the salmon comes from the sea, it has a fine metallic lustre, sufficient to show that it is a migratory fish, for it is only those which visit the salt waters that display this peculiar appearance. The head and back at this time are bluish black, passing through lighter shades to silvery white at the belly. There are also certain dusky spots on the upper part of the fish, which, together with much of the metallic lustre, disappear on its remaining long in the river.

The time of the salmon leaving the sea, and ascending the rivers, is so extremely variable, both with respect to different rivers, and also with respect to different fish in the same rivers, that we can only speak in a general manner on this subject. The young fish, and a few of the old ones, usually appear in the mouths of rivers at a very early season, even before all those of the former year have descended; but the fishing at this time is injudicious, because the descending fish are apt to be taken

with the others, and not having recruited their strength in the salt water, these are unwholesome as well as insipid. During the summer months, large and excellent salmon make their appearance in the estuaries, and after lingering for some time in the brackish water, ascend in succession to the higher parts of the stream. The cause of their remaining some time in water that is brackish, or partially salt, is probably to fit them for the change they will experience in becoming inhabitants of fresh water. It is extremely doubtful whether the fish could bear a sudden removal from salt to fresh water, or from fresh to salt, for it has been remarked that they do not ascend the smaller streams which enter the sea abruptly and have but little brackish water at their union. When they meet with no interruptions in their course, they ascend to a great distance, even 400 or 500 miles, though the further they run the worse they are esteemed for the purposes of the fisherman. Their industry and perseverance in overcoming such obstacles as may interfere to prevent their progress upwards are truly remarkable: by a sudden and powerful spring, they will often clear rapids or weirs of eight or ten feet in height. To perform this leap they appear to bend their tail into a curve to as great an extent as possible, and then strike the surface of the water with it, with violence, springing forward at the same instant. It is affirmed by the older naturalists, that in making the spring, the fish curves its body and puts its tail into its mouth, and this opinion is still entertained by many persons. In some situations where the fishes find the leap impracticable, they assemble in great numbers and wait till the swelling of the river shall have enabled them to accomplish their purpose; but where the fall is wholly insurmountable, the fish, after many fruitless attempts to clear it, at last commence spawning in the pool beneath. Rivers of this description are often productive of very excellent fish, for the progress of the salmon being checked, they return the sooner to the sea, in which situation they regain both size and flesh.

The leaping of salmon is mentioned by Michael Drayton in his work entitled *Polyolbion*, in which he describes the rivers, mountains, forests, castles, &c., of this country. The river Teivy or Tivy of which he speaks, is in Pembrokehire, and is described by Camden in his *Britannia*, as having at its junction with the sea a fall that is "so downright, and so high, that the people stand and wonder at the strength and sleight by which they see the salmon use to get out of the sea into the said river; and the manner and height of the place is so notable, that it is known far by the name of the 'salmon leap.'"

As when the Salmon seeks a fresher stream to find
(Which hither from the sea comes, yearly, by his kind),
As he towards season grows; and stems the watery track
Where Tivy, falling down, makes a high cataract,
Forced by the rising rocks that there her course oppose,
As though within her bounds they meant her to enclose;
Here when the labouring fish does at the foot arrive,
And finds that by his strength he does but vainly strive;
His tail takes in his mouth, and bending like a bow
That's to full compass drawn, aloft himself doth throw;
Then springing at his height, as doth a little wand
That bended end to end, and started from man's hand,
Far off itself doth cast; so does the salmon vault;
And if, at first, he fail, his second summersault
He instantly essays, and from his nimble ring
Still jerking, never leaves until himself he fling
Above the opposing stream.

Our frontispiece represents the salmon-leap above described. The depth of the fall at this place is not more than six or eight feet, but the accompanying scenery is picturesque and beautiful. The base of the rocky hill, Pen y Graig, round which the river sweeps, as well as the opposite bank, is richly wooded, and near the fall part of a mill appears obscurely through the foliage. At the foot of the cascade is a pool in which the salmon

rest when foiled in their attempt to ascend the stream; the privilege of fishing in the pool is obtained by the payment of an annual sum to the proprietors.

Another celebrated salmon-leap is at Ballyshannon in Ireland, and we are assured by those who have been eye-witnesses of the fact, that the leap taken by the salmon at this spot is at least fourteen feet in height, and including the curvature they make in performing it, must amount at least to twenty feet. Twiss tells us that he watched this interesting performance for hours, and observed that the fish sometimes bound almost to the summit, but the falling water dashes them down again; at other times they dart headforemost and sidelong on a rock, remain stunned for a few moments, and then struggle into the water again; when they are so lucky as to reach the top they swim out of sight in a moment. They seemed to bound, not from the surface of the water, but from some unknown depth beneath it. During these flights, (as they may be termed,) they have often been shot, or caught with strong barbed hooks fixed to a pole; and instances have been known of women catching them in their aprons. It is related of the salmon-leap at Kilmorach, Inverness, that Lord Lovat, knowing that of the great number of fish which endeavoured to spring over the fall, many often missed their aim, and fell upon the bank, placed a large pot on a fire made on the rocks close by, into which they occasionally dropped in their unsuccessful attempts, and thus enabled him to boast, that in his country provisions abounded so much, that if a fire were made and a pot set on to boil near the margin of a river, the salmon would of themselves leap into it, and thus save the trouble of fishing for them. This joke, however, involves too much unnecessary cruelty to win our admiration.

The salmon resort, for the purpose of spawning, to such situations as are best calculated for the preservation of the young fry. Cold, northerly regions are preferred by this fish, for there, though the arrival of warm weather is long deferred, the temperature is less variable than in more southerly situations. The alternate heat and cold of a long spring is very destructive to young and tender animals, and this is one of the causes why we find the northern rivers of Great Britain to be much more abundant in salmon than the southern.

The spawning of the salmon takes place at different periods throughout the autumn, but though the time varies, the mode of procedure is always the same. A shallow part of the stream is selected by the pair, and both male and female exert themselves in the preparation of a furrow, for the deposition of the spawn. They excavate this furrow by working in the sandy or gravelly soil with their snouts, taking care to keep their heads opposed to the direction of the stream, for they cannot "hang" or remain stationary in the water under any other circumstances. In descending rivers they can keep pace with the flow of the stream, or outrun it, and thus they experience no inconvenience, but if they were to linger, the water would get under the gill-lids, and choke them. The male fish, previous to the breeding season, becomes furnished with a hard and horny process on the lower jaw, and this is of service in the preparation of the spawning-furrow. While this gristly substance remains, the fish is said to be *kipper*, and unseasonable, but on the return of the salmon to the sea, this substance, according to Walton, gradually wears away, or is cast off; and he recovers his strength, and comes next summer, if possible, to the same river again. Sir Humphry Davy describes the kipper salmon as being so different in appearance from the salmon fresh from the sea, as scarcely to be recognised as belonging to the same species. He caught two fish in the river Tweed, one in the spent state, the other newly arrived from the salt water, and though they were both of the same length, one weighed only four pounds, the other nine pounds and a half. The spent or kipper salmon was

very lean, showing an immense head, spotted all over with black and brown spots, and the belly almost black; the other bright and silvery, without spots, and the head small. Their flesh was compared at table, and while that of the one was white, flabby, and bad, without curd, that of the other was of the brightest pink, and full of dense curd.

The process of depositing the spawn occupies eight or twelve days, and the ova is then carefully covered with gravel and stones. The fish then leave their numerous eggs or spawn, (estimated at from 17,000 to 20,000,) and retire to some neighbouring part of the stream, where the water is deeper, and more refreshing to them. In a fortnight or three weeks after this, the male fish sets out on his return to the sea, leaving the female behind to watch the spawning ground, which she continues to do till towards the time of the ova being hatched. The females are the first to leave the sea, and the last to return to it. For some time both before and after the spawning season, salmon are unfit for food; and thus being less sought for, the continuation of the species is insured.

The period during which salmon are out of season is indicated by a difference in their appearance, the males being at that time a reddish-brown on the back, and the females of a dusky gray. The fish descend to the sea by short stages, and with much less vigour and animation than they display at the time of ascending. The coldness of the weather at the time of their return, induces them to keep in the middle of the stream, at a considerable depth, which, owing to the water being warmer than the air, is the situation best suited to their feelings. In their ascent they are frequently seen in the shallows, or near the surface, from the very same sensibility to the weather which makes them, in winter, choose the opposite situation. Thus they reach the estuaries, and there lingering again in the brackish water, and finding an abundant supply of food, they quickly regain their size and strength, and proceed to their unknown abode in the recesses of the ocean. We must now return to the young fry in the spawning-bed, and state their progress from the time of their leaving the egg to that of their joining the rest of their race in the vicinity of the ocean.

At whatever period of the autumn the spawn may have been deposited, the time of its being hatched is always the same in the same river. Thus, supposing one pair of salmon to have arrived long before the rest, and that many weeks occur between the spawning of the female, and that of the others frequenting the same stream, yet on the arrival of the more genial season, the eggs last deposited are hatched at the same time with the first: hence, it is impossible to specify the exact time which intervenes between the spawning season, and the vivification of the eggs, the influence of the season being the sole cause of the latter circumstance. According to the state of the weather, therefore, the young fry come forth at an earlier or later period. The months of March and April are the usual period of their appearance, and they leave the ova in succession, for the manner in which the spawn is deposited prevents the under part of the mass from experiencing the effects of the warmer weather, until those at the upper part have burst the eggs. The young salmon remain for a few days in the sand and gravel, the egg still adhering to them, and affording them nourishment, but they soon begin to force their way upwards, and appear through the sand, shooting up like young plants. They are now about half an inch in length, and remain for some time in the shallow parts of the stream. Their earliest food is not very well known, but the abundance of small living creatures with which the waters begin to be filled at that season of the year, must prevent any chance of want in this respect. They grow very rapidly, and in the course of a week or ten days, they have more than doubled their former size.

As their strength increases, they resort to the deeper parts of the stream, and move towards the sea. Spring floods frequently carry them rapidly onwards, and by the month of June, the rivers are pretty well cleared of *smelt*, as the young fish are called. On their arrival at the sea, or rather at the brackish water, (for during the first season they seldom leave the estuaries and offings,) their growth is exceedingly rapid. Isaac Walton says, "the age of a salmon exceeds not ten years; and let me next tell you that his growth is very sudden; it is said that after he is got into the sea, he becomes from a samlet, not so big as a gudgeon, to be a salmon, in so short a time as a gosling becomes a goose." This, our author informs us, has been ascertained by tying a riband, or tape, in the tail of some young salmon which had been taken in weirs as they were swimming towards the salt water; and then by taking part of them again, having this known mark, at their return from the sea some months after.

The young salmon are the first to ascend the rivers; and towards autumn they are frequently found of the weight of six pounds. These are termed *grilse*, while those under two pounds weight are called "*salmon-peal*." They breed during the first season, and are said generally to ascend the same rivers in which they were spawned.

Salmon are supposed to go farther out to sea as they get older, but they cannot seek their food, as many sea-fishes do, in the depths of the ocean. They are formed for straightforward motion, and not for ascent or descent. The situation of the fins, and the upward direction of the eyes, in what are called "*bottom fishes*," are peculiarly fitted for the purpose of plunging to, and ascending from, the bottom of the ocean, but in the salmon the lateral direction of the eyes, and the arrangement of the fins, is equally fitted for uniform progression.

In a future article we shall mention the most celebrated salmon rivers, the different methods employed in taking the fish, and various other particulars relative to this interesting subject.

HOPE.

WHAT is hope? The beauteous sun,
Which colours all it shines upon
The beacon of life's dreary sea,
The star of immortality!
Fountain of feeling, young and warm;
A day-beam bursting through the storm;
A tone of melody, whose birth
Is, oh! too sweet, too pure, for earth:
A blossom of that radiant tree,
Whose fruit the angels only see!
A beauty and a charm, whose power
Is seen—enjoyed—confessed each hour!
A portion of that world to come,

When earth and ocean meet the last o'erwhelming doom.

To those who perform the duty of the day agreeably to its institution, Sunday is a day of cheerfulness, a festival; it is rest to the poor, relaxation to the rich, comfort to the afflicted, and admonition to the prosperous. If successful in our calling, our duty is thanksgiving; if distressed, prayer; if wealthy, gratitude; if poor, resignation. An opportunity for all these duties is afforded in public worship, and public worship is best suited to the weakness of our nature: for all stand in need either of example to aid their fervency, or exhortation to advance their progress, or mutual conformity to promote their devotion. After attendance upon the public service, I know of no rigid or gloomy observances which do not partake more of ceremony than of true religion. Calmness and tranquillity are the happiest produce of devotion; rest without indolence, recreation without dissoluteness, and conversation without cant, make the day a day of blessing to all who feel that a quiet mind, and serious conduct, afford more pleasure than the vicious ever experience in the indulgence of licentiousness or tumultuous joys.—DR. VINCENT.



BEJAPPOOR, IN HINDOSTAN.

BEJAPPOOR is the name of a large province in India, of one of the divisions of that province, and also of its principal city. The province of Bejapoor is situated in the south-western part of Hindostan, and is about 320 miles long and 200 broad: it is, however, to the city of Bejapoor that we propose to direct our attention in this paper.

The city of Bejapoor was formerly of great note. When the Emperor Aurungzebe captured it, in 1689, the fortifications, according to the description transmitted to us, appear to have been of immense extent; for between the wall of the fort and the outer wall of the old city there was said to have been room for 15,000 cavalry to encamp. Within the citadel or inner fort were the king's palace, the houses of the nobility, and large magazines, besides extensive gardens, and round the whole a deep ditch, always filled with water. "It is still asserted by the natives," says Mr. Hamilton, "with their usual proneness to exaggeration, that Bejapoor, while flourishing, contained 984,000 inhabited houses, and 1600 mosques."

Bejapoor now has the appearance of a record of other days, for by intestine commotions and revolutions, it is now little else than a heap of ruins, studded with splendid but unoccupied buildings. From a distance even of fourteen miles, numerous domes, spires, cupolas, and minarets present themselves to the eye; but a nearer approach dispels the illusion which they are calculated to raise, for it is very little better than a vast expanse of ruins.

About five miles from the city is a village called Toorvee, where are to be seen the remains of a royal palace, a mosque, and other buildings. To the east of this stands a Mohammedan mosque, still the resort of devotees; and near it are the remains of an elegant mausoleum and mosque, belonging to the minister of one of the bygone sovereigns of Bejapoor. Numerous other mausolea and mosques are met with from hence to the present city, among which the most celebrated are the mausoleum and mosque of Ibrahim Adil Shah: these were built about the year 1620, and are said to have cost

700,000*l.*, and to have occupied 6533 workmen for thirty-six years. They are built upon a basement one hundred and thirty yards in length, and fifty-two in breadth, and raised fifteen feet. The mausoleum is a room fifty-seven feet square, enclosed by two verandahs, thirteen feet broad, and twenty-two feet high. The central chamber of the latter is quite plain, as is also the interior of the mosque, but in other respects these buildings excel in elaborate architectural elegance. The fretwork of the ceilings of the verandahs, their panels covered with passages of the Koran, in bas-relief, and stone trellices, pierced with a meshwork of Arabic characters, are all in the highest style of Oriental sculpture.

Bejapoor itself may be considered as two cities adjoining each other, that which is called the *fort* lying to the east, and the *old city* to the west. The old city contained the buildings which we have just described. The fort was surrounded by a wall, eight miles in circumference, and though decayed in many parts, there is not yet a complete breach through any part of it. Guns were mounted on it, and sentinels placed at the gates, so late as 1819. There are seven gates, one of which is now shut up, and the others are open, viz., the Mecca, Shahpoor, Bhaminy, Padshapoor, Allahpoor, and Futteh gates. There were formerly a ditch, a covered way, and a glacis, on the eastern face, but scarcely any vestiges of them are now to be seen.

On coming within the fort, (or present existing city,) of Bejapoor, a scene of mingled splendour and ruin presents itself. There is still one entire and very regular street, three miles in length, and fifty feet wide, paved throughout, and containing many stone buildings, both private dwellings and mosques. Another street, nearly equal in length to this, also exists, but its buildings are rather in a ruinous state. The most remarkable edifices still remaining are the tombs of Abdul Reza and Shah Newauz, the Jumma Musjeed, or great mosque, the mausoleum of Sultan Mahmood Shah, the bowlee of the Nao Bagh, besides innumerable mosques and mausolea. There is also a low Hindoo temple, supported by numerous pillars of

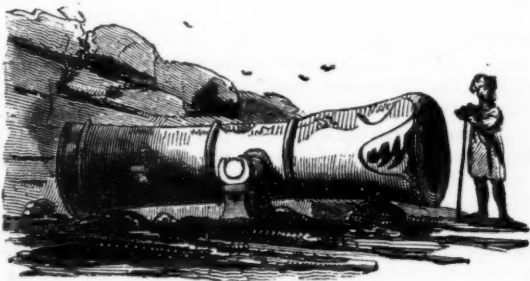
single stones, in the earliest and rudest style of Brahminical architecture, supposed to have been the work of the Pandoos; and this is almost the only Hindoo structure extant in or about Bejapoor; for the country, though in the heart of Hindostan, long belonged to the Mahrattas, who were Mohammedans.

The inhabited part of the fort is chiefly in the vicinity of the great mosque. There are also groups of houses scattered over its immense area, while mud hovels are interspersed among its splendid ruins. There are some enclosed and cultivated fields; but generally speaking, the neighbouring district is a ruinous wilderness, interspersed with trees and shrubs. There is a well frequented bazaar, neatly built of stone, without the western gate: this forms nearly the only part of what is called the old city that is still inhabited. On the southern side of the fort there are no traces of any ancient buildings, or of the city walls, the walls of the fort being the ultimate boundary of Bejapoor in that direction. Most of the large edifices, (the palaces in the citadel excepted,) appear to have little or no wood used in their construction, the prevailing character of their architecture being massive solidity, rather than elaborate workmanship or elegant design.

The cause of the ruinous state in which this once magnificent city now exists is to be found in the repeated contests for sovereignty which have taken place in that part of Hindostan. The district or country which contains Bejapoor was under the dominion of Hindoo sovereigns until 1579, when the Mohammedan princes of Southern India captured it. They retained it until 1689, when the Emperor Aurungzebe conquered it. After this the powerful tribe or nation of the Mahrattas got possession of the country, and retained it almost without intermission until modern times. But by about the year 1804, the province of Bejapoor exhibited an extraordinary scene of anarchy. Although the country was nominally under the chief of the Mahrattas, his authority scarcely extended beyond the city of Poonah, and was resisted by every petty head of a village: the different chiefs and leaders of banditti by whom the country was occupied were almost innumerable. At length, in 1818, Bejapoor was finally conquered by the British, and it is now probable that it will, under British protection, gradually improve in many respects.

Mr. Hamilton (to whose work we have been chiefly indebted for these details) says:—

There are some enormous guns still remaining here, corresponding with the Cyclopean magnitude of the fort. Formerly there were twelve, but in 1820 only the great brass gun, (cast in 1549,) and the long iron one remained. For the calibre of the first, an iron bullet, weighing 2646 pounds, would be required. In 1823 the Bombay government was extremely desirous of sending it to England, as a present to the king, but until the roads are improved, it would be almost impossible to transport such a ponderous mass to the sea-coast.



GREAT GUN AT BEJAPOOR.

TRUTH is the most powerful thing in the world, since even fiction itself must be governed by it, and can only please by its resemblance.—MILLINGEN.

SHOE-BUCKLES.

If we were to inquire into the influence of fashion and taste in manufactures, it would be found that the link which connects them is very close, and that the well-being of the working classes is singularly dependent thereon. Persons who view these matters only on the surface, are apt to imagine that changes of fashion are no further important than as means of gratifying the eye; but, so far from this being the case, every change of fashion brings some kind of mechanical labour or skill into exertion, and throws out others.

A singular example of this is shown in the rise, progress, and decline of that apparently very simple article of dress, the *shoe-buckle*, a decoration which, however much out of use at the present day, was indispensable to the appearance of a gentleman two or three generations ago.

The buckle was preceded, and has been superseded, by other forms of shoe-fastening. "Perhaps the shoe, in one form or other," says Mr. Hutton, of Birmingham, "is nearly as ancient as the foot. It originally appeared under the name of 'sandal'; this was no other than a sole without an upper leather. That fashion has since been inverted, and we now, sometimes, see an upper leather nearly without a sole. But, whatever was the cut of the shoe, it always demanded a fastening." Under the house of Plantagenet, the shoe shot forward horizontally from the foot to an enormous length, so as to require the extremity to be fastened to the knee, sometimes with a silver chain, at other times with a silk lace, and even with a piece of common packthread. This enormous beak to the shoe became the subject of legislative enactment; for we find that, in 1465, an order of council was issued, prohibiting the wearing of shoes whose beaks projected more than two inches in front of the foot, on pain of a fine to the king, and even of excommunication.

When this fashion changed, the rose shoe-toe sprang up, in compliment to the houses of Lancaster and Tudor. This rose in its turn gave way to shoe laces and strings, which were often made of silk, tagged and fringed with silver. At length, in the reign of William and Mary, the shoe-buckle made its appearance; or as Mr. Hutton quaintly expresses it, "the Revolution was remarkable for the introduction of William, of liberty, and the minute buckle." This mode of fastening the shoe became very generally adopted, in foreign countries as well as our own; and the town of Birmingham became celebrated for the large number as well as the excellence of the buckles made there.

Seventy years ago, the kind of buckle most in demand was made of Pinchbeck—an alloy of copper and brass, so called from the name of the person who so employed it. Another variety was the plated buckle: this was cast in pinchbeck, with the pattern on its surface, and a silver coating was laid on by means of a flux of turpentine and resin; and the surface was finally chased or stamped. A third and more valuable quality was the "close-plated" buckle. A form of buckle extensively made for foreign sale, was produced from a compound metal known among the workmen as Tutannia, and cast in moulds. It is said that in Germany, this article was manufactured in the open streets, so that a passenger might choose his pattern, see the process of making, and march off equipped with shoe-buckles, in the course of five or ten minutes. Each form of buckle had at that time some fanciful name, by which it was known in the trade; such as "Bull's eye," the "Marquis of Granby," the "Whim-wham," "Job's fancy," the "Crow's foot," and others.

About the year 1778, an impulse was given to the buckle trade at Birmingham, Walsall, and Wolverhampton, by the invention of plating upon tin or composition foundations. The buckles were cast singly by hand, in tin or copper moulds, the silver being first pressed into the mould, and the composition then poured over it.

The intimate union of the metals was aided by the use of corrosive sublimate. Different metals were employed, such as copper, steel, spelter, and others, to give hardness to the tin. This plan gave birth to many elegant devices in the shoe-buckle, as the union of the silver with the metal beneath was so complete as to admit of a varied range of patterns and arrangement of ornaments; particularly that of inlaying yellow chased ornaments on the surface of the silver.

A peculiar arrangement of the *chape*, a part of the buckle which fastened the shoe, enabled the manufacturer to give almost any size to the buckle, and to adopt a variety of shapes, such as round, octagonal, oval, oblong, &c. The competition among the makers now became very active; and a consequence resulted which too frequently deteriorates the credit of those employed: the materials and mode of workmanship became worse in quality, in order that the selling price might be low. It is said, that for many years the consumption of buckles in the metropolis was so enormous, that half the luggage of the coaches going from Birmingham to London was supposed to consist of buckles.

Soon after this period, a further change took place in the mode of manufacture, by making the shell or foundation of one metal, placing a layer of tin on that, and plating the exterior surface with silver. Another kind was the silvered buckle, in which the exterior layer of silver was excessively thin. The buckle being cast in some cheap metal, fine silver was dissolved in aqua-fortis, and precipitated in a powder; a few chemical ingredients were added, and the whole brought into a liquid state, and spread over the buckle with a brush. The buckle was then placed on a gentle fire till the ingredients were fused, and after a few other processes, the buckle acquired a silvery whiteness. This silvery surface would bear burnishing, and had a good appearance; but it was soon rubbed off by wear. So large was the demand for buckles coated with silver, that one Birmingham maker produced for one foreign house four thousand pounds worth in the space of six months.

Mr. Luckcock of Birmingham, who wrote on this subject, says that many a princely fortune was acquired during the efforts and fluctuations in the buckle-trade, and not a few as profusely squandered. No anticipation was contemplated, of any falling off in the demand. But the time was approaching when the buckle was to be superseded by another form of shoe-tie. "About the year 1790, the foe commenced an insidious attack; and however insignificant the agent might at first appear, the shoe-string was destined to accomplish the mighty revolution. For a long time the advances were inconsiderable, and hope was sanguine that the whim would be but of short continuance. Every manufacturer gradually felt the ground falling from beneath his feet, but still supposed that his competitors were doing better than himself; till confidence itself at length gave way to the general panic, and, if one may so express it, those were best off at last who got out first." The manufacturers, as generally happens in such cases, thought themselves aggrieved; but by whom was not an easy question to answer. They first tried ridicule, in a way which, it must be confessed, was sufficiently weak and foolish; viz., to parade an ass through the streets of Birmingham, with shoe-bows attached to his fetlocks. A more rational course adopted, was to send a deputation of master manufacturers up to London, to wait on the Prince of Wales (afterwards George the Fourth; at Carlton House, and solicit the aid of his countenance and support. The Prince received the deputation courteously, and promised to do all which his personal influence could effect, to discourage the use of the shoe-tie. But all to no effect; taste, fashion, opinion, call it what we will, had taken such a decided turn, that from that time (1791) the use of the shoe-buckle declined every year more and more.

Mr. Luckcock, who had himself been in the buckle

trade, estimated the number of persons engaged therein in and about Birmingham, at upwards of four thousand, when the manufacture was in the zenith of its prosperity; and he made the following calculations to show the importance of this trade. Suppose the weekly earnings of these persons, young and old, to have averaged ten shillings each:—

This would produce	£2000
Materials, say	2000
Profit of manufacturer, retailer, &c.	2000
	6000
Weeks in the year	52
	£312,000

And supposing the buckles to sell, on the average, at 2s. 6d. per pair, (this may now-a-days seem a high average; but a guinea or upwards was not an unusual price for gentlemen's buckles at the period of which we are speaking,) this would show 2,496,000 pairs as the quantity annually made. Taking the population of Great Britain at that time to be twelve millions, and suppose half of them to wear buckles, this would allow each wearer a new pair every three years, and about half a million of pairs for exportation, which is deemed no improbable supposition. On this calculation, every workman would make 625 pairs during the year, about two pairs per day, excluding Sundays. These calculations are of course only approximative; but they furnish curious evidence of the fluctuations to which manufactures are liable, and they are valuable as showing how necessary provident habits are to the workman, since he can never tell how soon a change may occur which will compel him to turn his talents into some new department of labour.

We will conclude by quoting a remark from Mr. Luckcock, who wrote in 1824:—"Of all the mutations and revolutions which this town has experienced within the last fifty years, none appear to be so remarkable or extraordinary as those connected with its ancient and apparently invaluable shoe-buckle trade. To those of the inhabitants who remember its vast extent and importance, it seems almost to mock at recollection; and as to the present generation, if the fact was not authenticated while some few of the surviving witnesses remain, it must soon have appeared incredible, that at one period there were not fewer than four thousand persons employed in the town and neighbourhood in this article, at that time so much admired, though now neglected and almost unknown. The universality of the demand seemed to bid defiance to the future caprice of fashion; and our daily bread appeared quite as likely to fail in its supply, as that orders should totally cease for this elegant and imagined necessary ornament."

WIRE-DRAWING.

I. HISTORICAL NOTICE.

AMONG the various modes by which metallic substances are brought into a form fitted for manufacturing purposes, few are more remarkable than the process of *wire-drawing*, whereby the metal is made to assume an equable, smooth, and cylindrical form, and a diameter varying through extensive limits. It seems highly probable, that in early periods metals were beaten with a hammer into thin plates or leaves, which were afterwards divided into narrow slips by means of some instrument resembling scissors; and that these slips were by a hammer and file rounded so as to form threads or wire.

All the ancient writings, so far as they relate to this subject, seem to support this opinion. In describing the holy garments of Aaron (Exodus xxxix. 3,) the inspired historian uses these words:—"And they did beat the gold into thin plates, and cut it into wires to work it in

the blue, and in the purple, and in the scarlet, and in the fine linen, with cunning work."

The profane writers speak similarly of slips, cut and beaten, as forming wires. Homer makes Vulcan repair to his forge, and form on his anvil, by means of hammers and files, a net as delicate as a spider's web. Beckmann supposes that the first employment of metals, in a form at all analogous to this, was by sewing slips of gold upon the clothes, and particularly on the seams; but that people afterwards began to weave or knit dresses entirely of gold threads, without the addition of any other material. Of such a kind are supposed to have been the mantle taken from the statue of Jupiter by Dionysius, as mentioned by Cicero and Valerius Maximus; and also the tunic of Heliogabalus, described by Lampridius. This appears to have been *drap d'or* in the proper sense of the term, for the more modern tissue known by that name was a species of cloth, the threads of which were of silk, wound round with gilt silver wire.

Pliny ascribes the weaving of such gold threads into cloth, as the invention of King Attalus; but later writers trace it to an earlier date, and it is supposed that Attalus merely applied gold threads to the surface of cloth in the manner of embroidery. The employment of silver for a similar purpose seems to be of much later date. Vopiscus states that the Emperor Aurelian was desirous of abolishing the use of gold for gilding and weaving, because, though there was more gold than silver, the former had become scarce by its frequent use for these purposes. Saumaise has proved that silver threads were interwoven in cloth in the time of the last Greek emperors; but it is not known how long this custom had then existed.

At what time the mode of making threads or wires of metal assumed a form analogous to that at present adopted, has been matter of dispute. It is extremely probable that the first experiments in wire-drawing were made upon the most ductile metals; and that the drawing of brass and iron to the form of wire is of later date. As long as the work was performed by the hammer, the artists at Nürnberg were called "wire-smiths;" but after the invention of the modern process, they were called "wire-drawers" and "wire-millers." As both these appellations occur in the histories of Augsburg and Nürnberg about the middle of the fourteenth century, it is deemed probable that the invention of wire-drawing may be placed in the early part of that century.

When gold lace,—that is, silk thread enveloped in a golden covering,—was first brought into use, it appears that the gold wire, used as the envelop, was round, or cylindrical, and that the flattening was introduced from motives of economy, since flat wire will go three times as far as cylindrical wire, when used merely as a covering. Of the wire-work of the ancients, few remains are known. In the museum at Portici, which contains a variety of articles discovered at Herculaneum, are three metallic heads, with locks in imitation of hair: one of them has fifty locks made of wire as thick as a quill, bent into the form of a curl; and on the other the locks are flat, like small slips of paper which have been rolled together with the fingers, and afterwards entangled. A figure of Venus has on the arms and legs golden bracelets, formed of wire. Among the insignia of the German empire is the sword of Saint Maurice, the handle of which is wood, bound round with strong silver wire. Such are a few instances of ancient workmanship at present remaining.

The present mode of making wire, as we shall hereafter explain, is by drawing small slips of wire through circular holes in a hardened steel plate; and it is supposed that this method was first constructed, if not invented, by Rudolph, a native of Nürnberg, in the fourteenth century. Conrad Celtes states that the son of the inventor, cajoled by avaricious people, discovered to them the whole secret of the machinery; which

so incensed the father that he would have put the incautious son to death, had he not precipitately escaped. Whether or not this was really the mode of promulgation, it appears certain that the art of wire-drawing soon attained a high degree of excellence at Nürnberg. Several improvements were from time to time made by different persons, who received exclusive patents for using them, sometimes from the emperor, and sometimes from the council, and which gave rise to many tedious lawsuits.

Dr. Hirsching has collected many curious details respecting the early progress of this art. In the year 1570, a Frenchman, named Anthony Fournier, first brought to Nürnberg the art of drawing wire exceedingly fine, and made considerable improvements in the apparatus employed for that purpose. In 1592, Frederick Hagelsheimer, a citizen of Nürnberg, began to prepare fine gold and silver wire, such as could be used for spinning round silk and for weaving, and which before that period had been manufactured only in Italy and France. He received from the Nürnberg magistrates an exclusive patent, by the terms of which no other person was allowed to make or imitate the fine works which he manufactured, for the term of fifteen years; and this term was afterwards further extended for a similar period, on the ground of the large capital expended in the manufactory. He afterwards obtained a patent for the production of copper wire coated with gold or silver; and he seems to have received high marks of favour from the Emperor Rodolphus the Second, and the Emperor Matthias. When the patents finally expired, in 1621, the family of Hagelsheimer entered into an agreement, in regard to wages and other regulations, with the master wire-drawers and piece-workers of Nürnberg.

Augsburg was also celebrated for the production of wire, the finer sorts of which were made by men invited from Italy, particularly Gabriel and Vincent Marteningi. In France, iron wire is called *fil d'Archal*, and the artists there have an idea that this appellation took its rise from one Richard Archal, who either invented or first established the art of drawing iron wire in that country. The expression *fil de Richard* is also used among the French wire-drawers. Menage, however, thinks that *fil d'Archal* is compounded of the Latin words *filum* and *aurichalcum*.

But little is known respecting the introduction of wire-drawing into England. It has however been stated that all the English wire was manufactured with the hammer, until certain foreigners introduced the improved method, in the reign of Queen Elizabeth. Christopher Schultz, a native of Annaberg, in Saxony, came to this country under the permission given by that sovereign to strangers, to dig for metallic ores; and it is to him that the introduction of iron wire-drawing is attributed in the year 1565. In a book published by John Houghton, however, in 1727, it is intimated that the art was brought to England at a later period; and that the first wire-drawing establishment was opened at Esher, in Surrey, by two foreigners, named Jacob Momma and Daniel Demetrius. Before the period here indicated, the English iron wire is said to have had so little reputation, that the greater part of what was used in the kingdom, as well as the instruments employed by the wool-combers, were brought from other countries. By the time of Charles the First, however, the manufacture had risen to some importance; and we meet with a proclamation by that monarch, in 1630, to the following effect:—

That iron-wire is a manufacture long practised in the realm, whereby many thousands of our subjects have long been employed; and that English wire is made of the toughest and best Orsmund iron, a native commodity of this kingdom, and is much better than what comes from foreign parts, especially for making wool-cards, without which no good cloths can be made. And whereas complaints have been made by the wire-drawers of this kingdom, that by reason of the great quantities of foreign iron wire lately imported,

our said subjects cannot be set at work; therefore we prohibit the importation of foreign iron wire, and wool-cards made thereof, as also hooks and eyes, and other manufactures made of foreign wire. Neither shall any translate and trim up any old wool-cards, nor sell the same at home or abroad.

It may appear to a modern reader, that the mention of "hooks and eyes" in the above proclamation was a very trivial affair; but such was not the case, for these small articles were used in such quantities at the time in question, as to render the consumption of wire in their manufacture very large.

In the seventeenth century the occupation of wire-drawing became firmly established in the neighbourhood of Barnsley in Yorkshire; partly on account of the proximity of the woollen manufacture (the cards for which are made of wire), and partly on account of the presence of coal and iron-stone in the neighbourhood. Since that period, great improvements have taken place, and the manufacture is now established in different parts of the North of England.

Having thus briefly traced the history of the art of wire-drawing, we shall in a second paper describe the processes by which various kinds of wire are produced.

HOT CROSS-BUNS.

THE popular cry of Hot Cross-Buns on Good Friday, is so familiar to all who have lived in a town, whether large or small, that the reader might incline to wonder, upon the first view of the case, why so apparently trifling a subject should be brought before his notice; but it is our duty to suggest two considerations on this head; first, that ages upon ages have rolled away, and cross-buns have been regularly made at the Paschal season of the year; and that which is ancient in its origin, will naturally, if only on account of its antiquity, attract our curiosity as it passes down the long extended river of time.

In the second place, though cross-buns will be found to be heathenish in their origin, popish in their progress, and common in their continuance; they nevertheless bear reference to the Cross of Christ,—the fountain of salvation to all who look to it, in reliance on the merits of their Redeemer.

Cecrops, one of the kings of Greece, about sixteen centuries before the Christian era, is said to have first offered up to the Divinity the sacred cross-bread, called a *bun*, (Greek *Βουν*), which was made of fine flour and honey. The prophet Jeremiah, who flourished about 600 years B.C., notices this kind of offering, when he speaks of the Jewish women at Pathros in Egypt, and of their base idolatry,—the *cakes*, which they offered up to the moon, the queen of heaven.

This cake or bun, which the Greeks called *Βουν*, from the representation upon it of the two horns of an *ox*, is therefore a species of bread, which originally used to be offered to the gods, and it was usually purchased by the worshippers at the entrance of the temple, and taken in by them, and eaten at the feast of the remaining parts of the sacrifice; to which St. Paul alludes in 1 Cor. x. 28.

It is a remarkable fact, that at Herculaneum were found two small loaves of about five inches in diameter, marked with a cross, within which were four other lines; and so, we are told, the bread of the Greeks was marked from the earliest periods. Sometimes it had only four lines altogether, and then it was called *quadra*. This bread had rarely any other mark than a cross, which was on purpose to divide and break it more easily. Similar loaves were discovered in a bake-house at Pompeii. These towns were overwhelmed and destroyed by the volcanic eruption of Mount Vesuvius, A.D. 79.

In the course of time we find the Christian Church using cakes or buns, such as we have already referred to, and consecrating them: these were bestowed in the church as alms, and likewise to those who, from any im-

pediment, could not receive the *host*, or consecrated wafer, at the usual time of the celebration of the Lord's supper. These buns were made from the dough, from which the *host* itself was taken, and they were given by the priest to the people after mass, just before the congregation was dismissed; and they were kissed before they were eaten. They were also marked with the cross, just as our present Good Friday buns are. This bun is the most popular symbol of the Roman Catholic religion in England that the Reformation has left to us.

Hot cross-buns have the usual form of buns; but they are inwardly distinguished from other buns by having a sweeter taste, and the flavour of allspice; and outwardly they are known by the mark of the cross, which, as our readers know, has been greatly insisted on in Papal worship and devotion, from the days of Constantine the Great, in the early part of the fourth century, to the present hour.

We see, therefore, that the bun of the ancient Greeks, crossed, to represent the horns of the ox which was sacrificed, and also for the purpose of more readily breaking it, was adopted by the Christians and used as the only food on the day of the Crucifixion, because it possessed, ready at hand, a symbol of that solemn event.

Many superstitions are connected with this species of bun. In some counties of England, great care is taken to preserve some of these cakes or buns, which being grated after they are dry, are esteemed by the credulous as infallible cures for many diseases. They have, however, been often found beneficial in bowel complaints.

In the houses of some ignorant people, a Good Friday bun is still kept "for luck;" and sometimes there hangs from the ceiling a hard biscuit, like cake of open cross-work, baked on a Good Friday, to remain there till displaced on the next Good Friday by one of similar make:—this is also supposed to preserve the house from fire.

Thus then the cakes or buns of Good Friday are marked with the sign of the Cross, in remembrance of the Crucifixion of our Saviour, who, having taken upon him the nature of man, suffered on this day for our redemption. The appellation of "Good," which has been conferred upon this day, is peculiar to the Church of England, and is accounted for, by referring to the blessed effects purchased for us by our Lord's sufferings. The ancient title of the day was "*Holy Friday*;" and the week in which it happens, is still denominated "*Holy*" or "*Passion week*."

THERE is a beautiful analogy between vegetable, and human life in early stages. No enduring and valuable fruit tree springs at once from the earth to maturity. It must go through a period of time, when it yields no fruit, and when it is an object of continual care and attention. Its nature must be considered, the earth around it must be kept in a fit state to promote its growth; its useless shoots must be cut off; its diseases, whether generated in itself, or caused by some invading foe, must be met and overcome. It may be let alone, and live, an incumbrance to the land, producing nothing worth gathering; or it may be an object on which the eye rests with pleasure, which its owner may be thankful for, and rationally proud to show. There is as much difference in the cares, anxieties, and duties, of raising a fruit tree, and bringing a human being to manhood, as the life of man is more precious than that of a tree.—S.

NOTHING strengthens a child in goodness, or enables him to overcome a fault, so much as seeing his efforts excite a sudden and earnest expression of love and joy.—MRS. CHILD.

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